Product Information

Caspase-5 Colorimetric Assay Kit

I. Kit Contents:

Component	K2196-25 25 assays	K2196-100 100 assays	K2196-200 200 assays	K2196-400 400 assays	Part Number
Cell Lysis Buffer	25 ml	100 ml	100 ml	100 ml	K2196-C-1
2X Reaction Buffer	2 ml	4 x 2 ml	16 ml	32 ml	K2196-C-2
LEHD-pNA (4 mM)	125 µl	500 µl	2 x 0.5 ml	2 x 1 ml	K2196-C-3
DTT (1 M)	100 µl	400 µl	400 µl	400 µl	K2196-C-4
Dilution Buffer	25 ml	100 ml	200 ml	400 ml	K2196-C-5

II. Introduction:

Caspase-5 belongs to the Caspase-family of cysteine proteases. Caspase-5 is an enzyme that proteolytically cleaves other proteins at an aspartic acid residue. Caspase-5 exists in cells as an inactive proenzyme and is matured by proteolysis. The active Caspase-5 is a heterotetramer containing two large and two small subunits. The function of Caspase-5 is believed to be an inflammatory Caspase, together with Caspase-1, Caspase-4, and has a role in the immune system.

The Caspase-5 Colorimetric Assay Kit provides a fast and convenient means for assaying the activity of Caspase-5 and other related caspases. These caspases can recognize the sequence WEHD. The assay is according to spectrophotometric detection of the chromophore p-nitroaniline (pNA) after cleavage from the labeled substrate WEHD-pNA. Using a spectrophotometer or a microtiter plate reader at 400 nm or 405 nm can quantify the pNA light emission. Comparison of the absorbance of pNA from a treated sample with an untreated control allows determination of the fold increase in Caspase-5 activity.

III. Caspase-5 Assay Protocol:

A. Reagent Preparation

Aliquot enough 2X Reaction Buffer for the number of assays to be performed. Add DTT to the 2X Reaction Buffer immediately before use (10 mM final concentration: add 10 µl of 1.0 M DTT stock per 1 ml of 2X Reaction Buffer).

B. Assay Procedure

1. Induce apoptosis by desired method. Concurrently incubate a control culture without treatment.
2. Pellet 2 - 5 x 10^6 cells.
3. Resuspend in 50 µl of chilled Cell Lysis Buffer and incubate on ice for 10 min.
4. Centrifuge for 1 min in a microcentrifuge (10,000 x g).
5. Transfer supernatant (cytosolic extract) to a fresh tube and then keep on ice.
6. Assay protein concentration.
7. Dilute 100 - 200 µg protein to 50 µl Cell Lysis Buffer for each assay.
8. Add 50 µl 2X Reaction Buffer (containing 10 mM DTT) to each sample. Add 5 µl of the 4 mM WEHD-pNA substrate (200 µM final conc.). Incubate at 37℃ for 1 - 2 hour.
9. Read samples at 400 nm or 405-nm in a microtiter plate reader, or spectrophotometer using a 100-µl micro quartz cuvette (Sigma), or dilute sample to 1 ml with Dilution Buffer and use regular cuvette (note: Dilution of the samples proportionally decreases the reading).

You may also perform the assay in a 96-well plate.

Fold-increase in Caspase-5 activity can be determined by comparing the results of treated samples with the level of the untreated control.

IV. Note:

Background reading from cell lysates and buffers should be subtracted from the readings of both treated and the untreated samples before calculating fold increase in Caspase activity.

V. Storage and Stability:

Store kit at -20℃ (Store Cell Lysis Buffer, 2X Reaction Buffer, and Dilution Buffer at 4℃ after opening.). Protect WEHD-pNA from light. All kit components are stable for 6 months under proper storage conditions.

General Troubleshooting Guide for Caspase Colorimetric and Fluorometric Kits:

Problems	Cause	Solution
Assay not working	• Cells did not lyse completely • Experiment was not performed at optimal time after apoptosis induction • Plate read at incorrect wavelength • Old DTT used	• Resuspend the cell pellet in the lysis buffer and incubate as described in the datasheet • Perform a time-course induction experiment for apoptosis • Check the wavelength listed in the datasheet and the filter settings of the instrument • Always use freshly thawed DTT in the cell lysis buffer
High Background	• Increased amount of cell lysate used • Increased amounts of components added due to incorrect pipetting • Incubation of cell samples for extended periods • Use of expired kit or improperly stored reagents • Contaminated cells	• Refer to datasheet and use the suggested cell number to prepare lysates • Use calibrated pipettes • Refer to datasheet and incubate for exact times • Always check the expiry date and store the individual components appropriately • Check for bacteria/ yeast/ mycoplasma contamination
Lower signal levels	• Cells did not initiate apoptosis • Very few cells used for analysis • Use of samples stored for a long time • Incorrect setting of the equipment used to read samples • Allowing the reagents to sit for extended times on ice	• Determine the time-point for initiation of apoptosis after induction (time-course experiment) • Refer to datasheet for appropriate cell number • Use fresh samples or aliquot and store and use within one month for the assay • Refer to datasheet and use the recommended filter setting • Always thaw and prepare fresh reaction mix before use
Samples with erratic readings	• Uneven number of cells seeded in the wells • Samples prepared in a different buffer • Adherent cells dislodged and lost at the time of experiment • Cell/ tissue samples were not completely homogenized • Samples used after multiple freeze-thaw cycles • Presence of interfering substance in the sample • Use of old or inappropriately stored samples	• Seed only equal number of healthy cells (correct passage number) • Use the cell lysis buffer provided in the kit • Perform experiment gently and in duplicates/triplicates; apoptotic cells may become floaters • Use Dounce homogenizer (increase the number of strokes); observe efficiency of lysis under microscope • Aliquot and freeze samples, if needed to use multiple times • Troubleshoot as needed

		• Use fresh samples or store at correct temperatures until use
Unanticipated results	• Measured at incorrect wavelength • Cell samples contain interfering substances	• Check the equipment and the filter setting • Troubleshoot if it interferes with the kit (run proper controls)
General issues	• Improperly thawed components • Incorrect incubation times or temperatures • Incorrect volumes used • Air bubbles formed in the well/tube • Substituting reagents from older kits/ lots • Use of a different 96-well plate	• Thaw all components completely and mix gently before use • Refer to datasheet & verify the correct incubation times and temperatures • Use calibrated pipettes and aliquot correctly • Pipette gently against the wall of the well/tubes • Use fresh components from the same kit • Fluorescence: Black plates; Absorbance: Clear plates
Note# The most probable cause is listed under each section. Causes may overlap with other sections.		

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